

Tilburg University

Phonological memory deficit for auditory and visual speech in adult developmental dyslexics

de Gelder, B.; Vroomen, J.; Zon van, M.; Teunisse, J.P.

Published in:
Journal of Clinical and Experimental Neuropsychology

Publication date:
1992

[Link to publication in Tilburg University Research Portal](#)

Citation for published version (APA):
de Gelder, B., Vroomen, J., Zon van, M., & Teunisse, J. P. (1992). Phonological memory deficit for auditory and visual speech in adult developmental dyslexics. *Journal of Clinical and Experimental Neuropsychology*, 14, 116.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

(MM), meningocele (M), aqueductal stenosis (AS), and aged-matched normals. The volume of each lateral ventricle and the cross-sectional area of the corpus callosum and the internal capsules were correlated with neuropsychological assessment of verbal and nonverbal cognitive skills. For the MM and AS groups, the corpus callosum was smaller. The lateral ventricles were larger and both internal capsules were smaller in all patient groups relative to controls. Nonverbal measures correlated positively and at a higher level than verbal skills with the corpus callosum and inversely with the right lateral ventricle and both internal capsules, but not the left lateral ventricle. Verbal measures were correlated inversely with the left lateral ventricle and left internal capsule. These results show a critical relationship between the size of the corpus callosum and reductions in nonverbal skills that are also influenced by hydrocephalus-related changes in other cerebral white matter tracts.

M.C. BROWN, B.E. LEVIN, & R.E. RAMSAY. *Left Schizencephaly: Intact Cognition Despite a Nonfunctional Hemisphere.*

We report the neuropsychological, MRI, EEG telemetry, and Wada testing data of an adult male with a left hemisphere schizencephaly. Although most cases of schizencephaly are described as mentally retarded, our patient demonstrated above average cognitive functioning when assessed using a comprehensive battery of neuropsychological tests. Injection of the right carotid artery during Wada testing resulted in bilateral loss of motor strength, along with disruption of speech and language. No changes were observed following left-sided injection. These findings indicate functional reorganization of the brain resulting in complete right hemisphere representation of speech and language functions. The fact that there was no evidence of impaired visuospatial skills argues against a "crowding effect" or functional competition for intact neural tissue.

B. DE GELDER, J. VROOMEN, M. VAN ZON, & J.P. TEUNISSE. *Phonological Memory Deficit for Auditory and Visual Speech in Adult Developmental Dyslexics.*

Developmental dyslexics are known to perform poorly on metaphonological tasks tapping skills critically associated with reading skills. The present study investigates the possibility that these impairments are related to underlying phonological processing deficits that remain present in adult developmental dyslexics. A serial recall paradigm was used requiring subjects to recall a list of seven spoken digits presented in three different conditions: auditorially, visually (requiring lip reading), and audiovisually. The performance of the dyslexics was poor, specifically on the latter part of

the list. More surprisingly, this impoverished performance pattern was observed to the same extent in the visual only condition and in the auditorial condition. The fact that the impairment is observed across very different input modalities (acoustic vs. optic) for speech strongly suggest the phonological origin of the impaired memory performance.

S. NICHOLS, K. BRUGGE, D. DELIS, & D. TRAUNER. *Down Syndrome Adults Exhibit Cognitive Deficits Similar to Those Seen in Alzheimer's Disease.*

Moderately retarded adults with Down Syndrome (DS; ages 22-51) were assessed using neuropsychological tests sensitive to early detection of Alzheimer's disease. Preliminary results demonstrate that, compared to non-DS retarded adults, DS subjects showed severely impaired delayed recall and high intrusion rates on a verbal learning task. Older DS subjects also showed a decrease on other verbal and visuospatial recall measures and in category fluency. These results demonstrate a pattern of cognitive deficits in DS similar to those in Alzheimer's disease.

M. BLOCH. *A Test of Four Neuropsychological Models of Dyslexia.*

The present experiment was designed to investigate which of four neuropsychological models of dyslexia best described the laterality patterns observed in dyslexic boys with phonetic decoding deficiencies. Three test of laterality, a dichotic task, a tactile task, and a free-vision Chimeric face task, were administered to a group of dyslexic children as well as a group of normal children of similar ages and IQs. The results of the tests are best explained by a dysfunctional hemispheres model, which suggests that dyslexics are lateralized in ways similar to normals (left hemisphere dominant for linguistic tasks, right hemisphere dominant for spatial tasks), but display an overall performance deficit compared to normals. Directions for further research concerning the models are discussed.

R. CHAYO-DICHY, F. OSTROSKY-SOLIS, S. MENESES, T. HARMONY, & M. GUEVARA. *Dyslexia: An Electrophysiological Approach.*

Clinical evidence has shown that expectancy influences the ability to read. It is possible that the reading problems shown by dyslexic children could be due to the absence of anticipatory hypotheses when they decode verbal material. We used event related potentials (ERPs) to see if it could be detected on an electrophysiological level. We studied the differences between normal and dyslexic children in ERPs recorded on the presentation of words both in and out of context. Also, we registered the CNV-PINV waves which are related to